

FLIGHT

The
**AIRCRAFT
ENGINEER
&
AIRSHIPS**

First Aero Weekly in the World

Founder and Editor: STANLEY SPOONER

A Journal devoted to the Interests, Practice, and Progress of Aerial Locomotion and Transport

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DIARY OF FORTHCOMING EVENTS

Club Secretaries and others desirous of announcing the dates of important fixtures are invited to send particulars for inclusion in the following list:—

1925

- May 20 Visit to the National Physical Laboratory, Teddington, by I.Ae.E.
- May 21 Aero Golfing Soc. Match, Cassiobury Park.
- May 28-June 13 Royal Tournament, Olympia.
- May 28 R.A.F. Middle East Dinner.
- May 29 Aero Golfing Soc. Match, Oxhey.
- May 31-June 9 Deutscher Rundflug.
- June 6 Visit to Croydon Aerodrome, by I.Ae.E.
- June 7 Gordon Bennett Balloon Race, Brussels.
- June 12 Entries close for King's Cup Race.
- June 23 Independent Force (R.A.F.) Re-Union Dinner, R.A.F. Club, 7.45 p.m.
- June 25 Aero Golfing Soc. Match, Mid-Surrey.
- June 27 Royal Air Force Pageant, Hendon.
- June 27 R.A.F. Iraq Dinner, Holborn Restaurant, at 8.15 p.m.
- July 3-4 King's Cup Race.
- July 26-Aug. 9 Vauville Light 'Plane and Glider Meeting.
- Aug. 1-3 Royal Aero Club Race Meeting at Lympne.
- Sept. 19-28 F.I.A. Conference at Prague.

EDITORIAL COMMENT.



ELSEWHERE in this week's issue of FLIGHT we publish the broad outlines of a proposed scheme for operating trans-oceanic air services by means of heavier-than-air craft and station ships. The scheme is, it will be realised, one of the most daring that have ever been put forward, and at first sight is likely to take one's breath away. Similar schemes have been suggested from time to time, and one in particular, of French origin, suggests the use of "floating islands" for a similar purpose. In the case of these floating islands, however, it does not require any great knowledge of naval architecture to realise that in a rough sea the twisting stresses that might be set up in the horseshoe-shaped "islands" might reach dangerous figures. In this respect, at any rate, it does appear to us that Mr. Gaynor's station ships are superior, since they would be vessels of fairly orthodox shape, and thus their behaviour in a seaway might be expected to be normal.

Apart from this, however, the project is not without its difficulties. These, it seems to us, are not so much connected with the seaplanes themselves as with the problem of approaching the station ships, transferring fuel to the seaplanes or, in rough weather, the hoisting on board of the seaplanes. Not a great deal of experience is available to enable one to express a definite opinion on the subject, but such as does exist indicates that for a seaplane to approach a station ship rolling heavily in a rough sea, and for that seaplane to establish communication with the ship to the extent of getting a hawser on board and to rig the hoisting tackle and, finally, lifting the seaplane out of the water and depositing it safely on the deck of the vessel, would present very serious problems.

Then there is the problem of fogs. Even with direction-finding wireless it might be a matter of great difficulty for the flying boat to locate with sufficient accuracy the station ship and to approach it without damage to the seaplane. There are, of

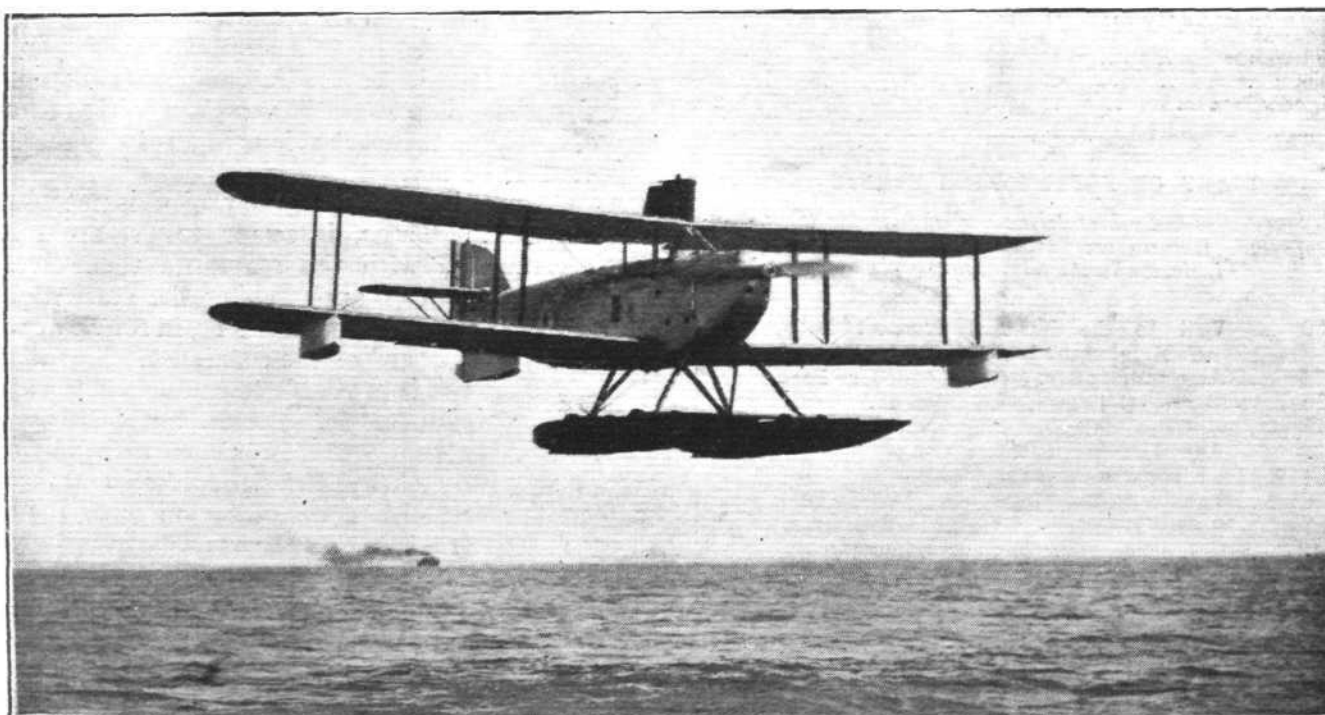
course, many other difficulties which could be enumerated, and it is, perhaps, significant that they all appear to be connected with establishing communication between seaplane and station ship, and not with the machines themselves. Given a good design of machine, with possibly three engines, any two of which were able to fly the machine, the chance of a forced descent between station ships is probably extremely small. We do not suggest that the difficulties are insuperable, but it is no manner of good closing one's eyes to them, and we do feel that at present our knowledge of the subject and our practical experience are not such as to warrant launching out straight away with such an extensive scheme.

If a series of experiments on a lesser scale could be carried out first, for instance, over the North Sea, with two station ships suitably placed, it seems to us that a great deal of valuable experience would be gained at relatively small cost and with practically no risk to personnel or material. It should not be a difficult matter, in view of the present idleness of a lot of shipping, to obtain on loan or hire a couple of vessels which could be converted for the purpose and which, although possibly not as perfect as specially designed station ships, would still be sufficiently serviceable to provide experience upon which a more ambitious route could be based. The subject is an extremely fascinating one, and, if proved practicable, would appear to have certain not inconsiderable advantages over trans-oceanic airship services. For example, it might reasonably be expected that the cruising speed of the seaplanes, especially if they were found capable of flying night and day, would be very materially greater than that of an airship. Also, there is in some respect an advantage in dividing up the load among a number of smaller units. If an airship is lost it means, apart from a large and possibly valuable cargo, a very serious financial loss of the capital represented by the airship. With 30 or 40

seaplanes operating a similar route the loss of one machine would be nothing like as serious. But we would like to emphasise our opinion that there are too many unknown factors for the scheme to be undertaken in its entirety at once, although we are all in favour of experiments being carried out on a smaller scale.

Gliding

The glider meeting at present being held at Rossitten, on the Baltic, and the forthcoming meetings in the Rhön and at Vauville (at which "gliders" are the main feature) once more call attention to a sport which, unfortunately, was very short-lived in this country. Looking at the photographs from Rossitten which we publish this week, who can doubt that the Germans are deriving a great deal of pleasure and healthy exercise from this sport? Even if it is granted—and we are not prepared to agree that this is so—that nothing much can be learned from gliding, and that it is not and cannot be of any commercial value, few will surely deny that it can provide unique sport. It might have been thought that gliding would appeal particularly to the British temperament, and that once Itford Hill had given us a start we should have carried on. Unfortunately, Maneyrol took his Peyret up and remained aloft so long that people received the impression that "there is nothing in gliding," and the sport was allowed to drop. We believe that even at this late hour it might still be worth while to revive gliding in this country. One of the machines illustrated this week shows a small biplane with watertight hull, which alights without difficulty on the sea after a flight. Does not that type promise excellent sport at our summer resorts? We think it does, and there must be many places on the south coast where the cliffs would give sufficient up currents to enable machines to make fairly long flights. Who will be bold enough to start the ball rolling?



The Fairey "Fremantle" : A long-range twin-float seaplane with Rolls-Royce "Condor" engine. This machine carries a crew of five. The main petrol tanks are housed in the floats, which are exceptionally large, giving the machine a cruising range of approximately 1,100 miles. The top speed is about 100 m.p.h. and the cruising speed 80 m.p.h. A feature of the machine is its large wireless cabin, which is situated aft of the pilot's cockpit.

THE SIKORSKY S.29A COMMERCIAL BIPLANE

FOR some time past M. Igor Sikorsky, the Russian aircraft designer and pioneer of the giant multi-engined aeroplane—the huge Sikorsky biplanes of 1914 were, perhaps, the first successful aeroplanes employing more than two engines and having total wing spans in the neighbourhood of 100 ft. or so—has been engaged in the design and construction of a medium-sized twin-engined "transport" aeroplane. This work, which has been carried out at New York, U.S.A., where M. Sikorsky and several other Russians (driven from Russia by the Revolution) have established themselves, has just recently advanced to the stage where the first flying tests have been carried out, at Roosevelt Field, L.I., by the senior aeronautical students of New York University, under the direction of Alexander Klemin, Associate Professor of the University.

be mentioned that the cabin interior is free from all leads, petrol fumes, etc.

The power plant—two 400 h.p. "Liberty" engines mounted on the lower wings—is well installed, each engine with the oil, etc., installation forming a separate unit, which can be easily and quickly removed or replaced. The fuel system, consisting of gear pump and gravity tank, is simple and reliable, and the risk of fire has been reduced to a minimum. The engines are carried by strong, rigid steel (channel-section) frames mounted on and projecting forward of the lower plane, and forming neat nacelles. The radiators are located at the rear of these nacelles, and can slide in and out for varying the amount of surface exposed to the air.

As regards the structural features of the S.29A, the

■ ■ ■ ■ ■ ■ ■ ■
 ■ The Sikorsky
 ■ S.29A Commer-
 ■ cial Biplane: A
 ■ twin-engined (400
 ■ h.p. "Liberty")
 ■ transport ma-
 ■ chine designed
 ■ and constructed
 ■ in America by the
 ■ well-known Rus-
 ■ sian designer,
 ■ Igor Sikorsky;
 ■ it is almost en-
 ■ tirely of metal
 ■ construction.
 ■ ■ ■ ■ ■ ■ ■ ■

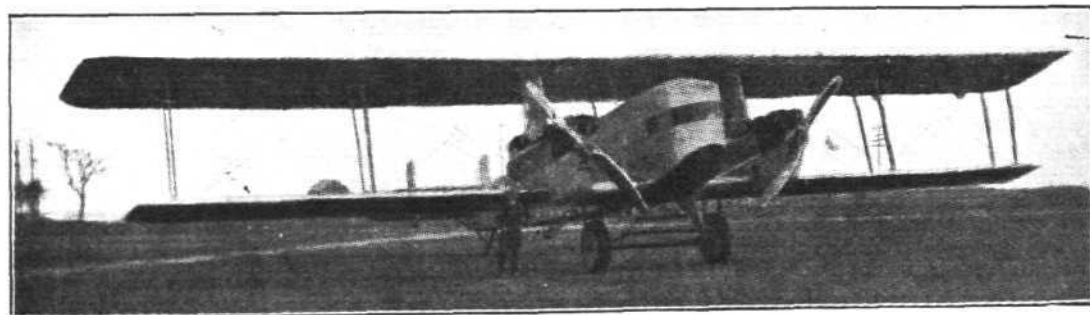


Owing to severe weather conditions the full programme of the tests scheduled could not be carried out, but sufficient data was secured to give an idea of the performance of the machine. From the accompanying illustrations it will be observed that the Sikorsky S.29A is a twin-engined cabin-fuselage biplane, the general lines of which, though more or less conventional, are clean-cut and pleasing.

The pilot is provided with a roomy cockpit situated well back along the fuselage, where he has an excellent range of vision in all directions. Provision is also made in the same cockpit for a mechanic, who sits beside the pilot—there being plenty of room for both, their comfort having been well looked after. The various instruments and controls are well arranged within the cockpit.

general construction, which is mainly of metal, is what might be termed "rugged" and simple, and is reported to be particularly promising from the production point of view. The main wing spars are built up of cold-rolled steel angles and channels forming I beams. A number of strong ribs, spaced about 3 ft. apart, and made of duralumin channels and ties 0.035 to 0.055 in. thick, connect the two main spars, with six false spars running parallel to the latter. Light intermediate ribs of 0.02-in. gauge channel section are riveted to the main and false spars.

The tail plane and control surfaces—which are of ample proportions and easily operated—are also built up of steel and duralumin. The tail plane is adjustable as to incidence from the pilot's cockpit, while the rudders possess a some-



■ ■ ■ ■ ■ ■ ■ ■
 ■ The Sikorsky
 ■ S.29A Commer-
 ■ cial Biplane:
 ■ Front view, show-
 ■ ing the arrange-
 ■ ment of the
 ■ two "Liberty"
 ■ engines.
 ■ ■ ■ ■ ■ ■ ■ ■

Extending from the pilot's cockpit to the nose of the fuselage, the passengers' cabin is exceptionally roomy and comfortable, providing accommodation for about ten passengers and measuring 20 ft. by 4 ft. by 6 ft. Windows round the sides and in the nose afford splendid vision, while there is plenty of head room, enabling the passengers to move about with ease. The ventilation of the cabin is good, and access is by a door on each side of the fuselage. These doors are in two parts, an upper sliding portion, which can be opened during flight, and a lower portion, which hinges down and forms a stairway into the cabin from the ground. A door at the rear of the cabin communicates with the pilot's cockpit, while two doors in the central part of the cabin enable the mechanic to get at the engines, *via* the wings, during flight. It should

what novel feature. The two outer rudders (there are three in all) are single cambered, with the camber on the inner side—an arrangement that possesses certain advantages when flying on one engine. When both engines are on, the rudders in normal position neutralise one another, but if one engine is throttled down or goes out of action, the rudder in the slipstream of the engine still running will exercise a turning tendency opposing the turning effect of the engine.

The fuselage is also built up of steel and duralumin. The longerons are of steel angles, and at the cabin portion the struts are steel channels, and of duralumin channels at the rear. Transverse bracing at the cabin is by means of gusset plates.

A well-sprung, although somewhat narrow-track, landing gear is fitted, the shock-absorbers, giving a 12-in travel, being enclosed in the wing.

The following are the general characteristics of the Sikorsky S 29A, together with particulars of two performance tests. The latter, it is interesting to note, were carried out by M. Sikorsky himself:—

Span (upper)	69 ft.
„ (lower)	63 ft.
Chord (upper)	10 ft. 3 ins.
„ (lower)	5 ft.
O.A. length	49 ft. 10 ins.
O.A. height	13 ft 6 ins.
Total wing area	992 sq. ft.
Area of tail plane	58 sq. ft.
Area of ailerons	72 sq. ft.
Area of elevators	50 sq. ft.
Area of rudders	38 sq. ft.
Wing section	Sikorsky 18 (modified Göttingen 436)
Incidence to thrust line	4 deg.
Weight, empty	7,775 lb.
Specified useful load	4,225 lb.
Specified gross weight	12,000 lb.
Wing loading	12.1 lb./sq. ft.
Power loading	15 lb./h.p.
Safety factor	4-5
Airscrews	Hamilton, 10 ft. 4 ins. dia., 5 ft. 10 ins. pitch

Performance Tests.—Flights with one engine throttled. Right and left-hand turns were made at a barograph altitude of about 1,100 ft., with right engine all out and left engine throttled down to 750 r.p.m. Both right and left-hand turns were made with ease, but no steep banks were attempted. Data:—

Weight empty (with water)	7,775 lbs.
Disposable load of—	
9 men	1,530 lbs.
108 galls. of petrol	648 lbs.
9 galls. of oil	67 lbs.
Equipment, etc.	241 lbs.
Total disposable load	2,486 lbs.

London's Air Defences

THE one week's extensive recruiting campaign in connection with London's Anti-Aircraft Territorial Air Defence scheme was brought to a conclusion on May 2. As a result of the various demonstrations in Hyde Park, the Mansion House, etc., the air raids each evening, and the 2 LO concerts relayed to the waiting crowds in between the recruiting speeches, it would seem that this campaign has been a highly successful one, for up to last week over 1,200 recruits have joined the various London Air Defence units—and more are still coming in. Perhaps by the time these lines appear in print, "House Full" notices will, for the time being, make their appearance.

Flying over Germany

FURTHER to our report last week regarding the mission to Germany of Col. Edwards and Mr. Bertram in connection with the matter of flying over Germany, it is stated that the negotiations resulted in an offer to sign an agreement for five years, which would permit the continuance of the services on the London-Amsterdam-Berlin and the London-Brussels-Cologne routes under existing conditions. The German representatives also offered to withdraw the restrictions on the number of flights made weekly on the London-Berlin service, so that Imperial Airways, Limited, could, if they desired, maintain daily services on that route. But the German Government felt unable to extend these facilities to a regular service over German territory to a destination in another State. This decision prohibits the possibility of a British service flying to Prague across Southern Germany. Germany is prepared to permit individual flights across the country upon special application.

We understand, also, that the Conference of Ambassadors has decided to make a slight modification in the restrictions on German Civil Aircraft. Germany now will be able to build and use passenger machines up to 450 h.p., but certain minor conditions will be laid down in this connection.

Funeral of Clement Ader

THE funeral of Clement Ader took place on May 6, at Muret, his birthplace, the State bearing the cost of the ceremony. M. Laurent Eynac, French Under-Secretary for Aviation, attended, and pronounced a eulogy of the inventor.

Gross weight	10,261 lbs.
Initial recording barograph reading	900 ft.
Final do.	1,350 ft.
Duration of climb, one engine	15 mins.
R.p.m. (right engine)	1,540.
R.p.m. (left engine)	750.
Average air speed during climb	70 m.p.h.
Corrected climb, standard air at 1,125 ft.	28.4 ft./min.
Temperature	38° F.
Maximum Speed, Climb and Ceiling Test—	
12 men	2,040 lbs.
128 galls. petrol	768 lbs.
12 galls. oil	89 lbs.
Total disposable load	3,082 lbs.
Gross weight	10,857 lbs.
Max. speed, corrected to standard air at 550 ft.	111.2 m.p.h.
Min. speed	55.6 m.p.h.
Service ceiling	12,300 ft.
Climb to 5,000 ft.	8.8 mins.
„ 10,000 ft.	23 mins.
R.p.m. up to 10,000 ft.	1,550 (R.); 1,525 (L.)
„ above 10,000 ft.	1,525 (R.); 1,475 (L.)

Observers during the performance tests reported that the control of the machine was exceptionally easy, and that excellent steadiness in flight was observed under severe weather conditions. Landings were always made with ease and comfort, and the get-away was rapid.

Lieut. C. E. Archer, of McCook Field, reports on the Sikorsky as follows:—

It is easy on the controls, a very slight movement of the wheel being required for straight flight or turns. Rigidity of the structure in flight particularly noticeable, there being not the slightest vibration in any part, although during the flight the engines were quite rough. Machine flew and actually climbed about 150 ft. in a very few minutes on one engine, and the take-off was made in 9½ secs.

In conclusion, M. Sikorsky states that the machine was built under somewhat difficult conditions, with very little shop equipment available. The entire design is, therefore, capable of refinement and could be lightened (without sacrificing strength) by some 750 lbs.

The Big Italian Flight

COL. M. DI PINEDO, Chief of Air Staff in Italy, is making good progress in his flight to Australia on a Savoia S. 16 ter flying boat. He left Karachi at 11 p.m. on May 8, and arrived in Bombay Harbour at 5.20 p.m. that evening. There he received a telegram from Lord Lytton, acting Governor-General, congratulating him on his safe arrival in India. On May 10 he proceeded from Bombay to Cocanada, Madras, where he arrived the following morning, having landed en route at Raja Mundry. On May 12 he arrived at Calcutta.

The "Los Angeles" Returns to Lakehurst

AFTER her successful flight last week to Porto Rico the U.S. rigid airship "Los Angeles" (ZR. 3) arrived safely back at Lakehurst, N.J., on May 10.

Amundsen's Polar Flight

FOR some days past all has been in readiness at Spitzbergen for Capt. Amundsen's flight to the North Pole. The weather conditions, however, have been unfavourable, and the attempt has been postponed until the end of this month or the beginning of June.

The Air Operations in Iraq and India

THE air operations against the Yezidi tribesmen in the Linjar Mountains, which have been in progress for some time, have, it is stated, now ended successfully, the leaders concerned having come to terms. Similarly, the air operations against the Mahsud tribal raiders in India have resulted in the complete submission of the offenders.

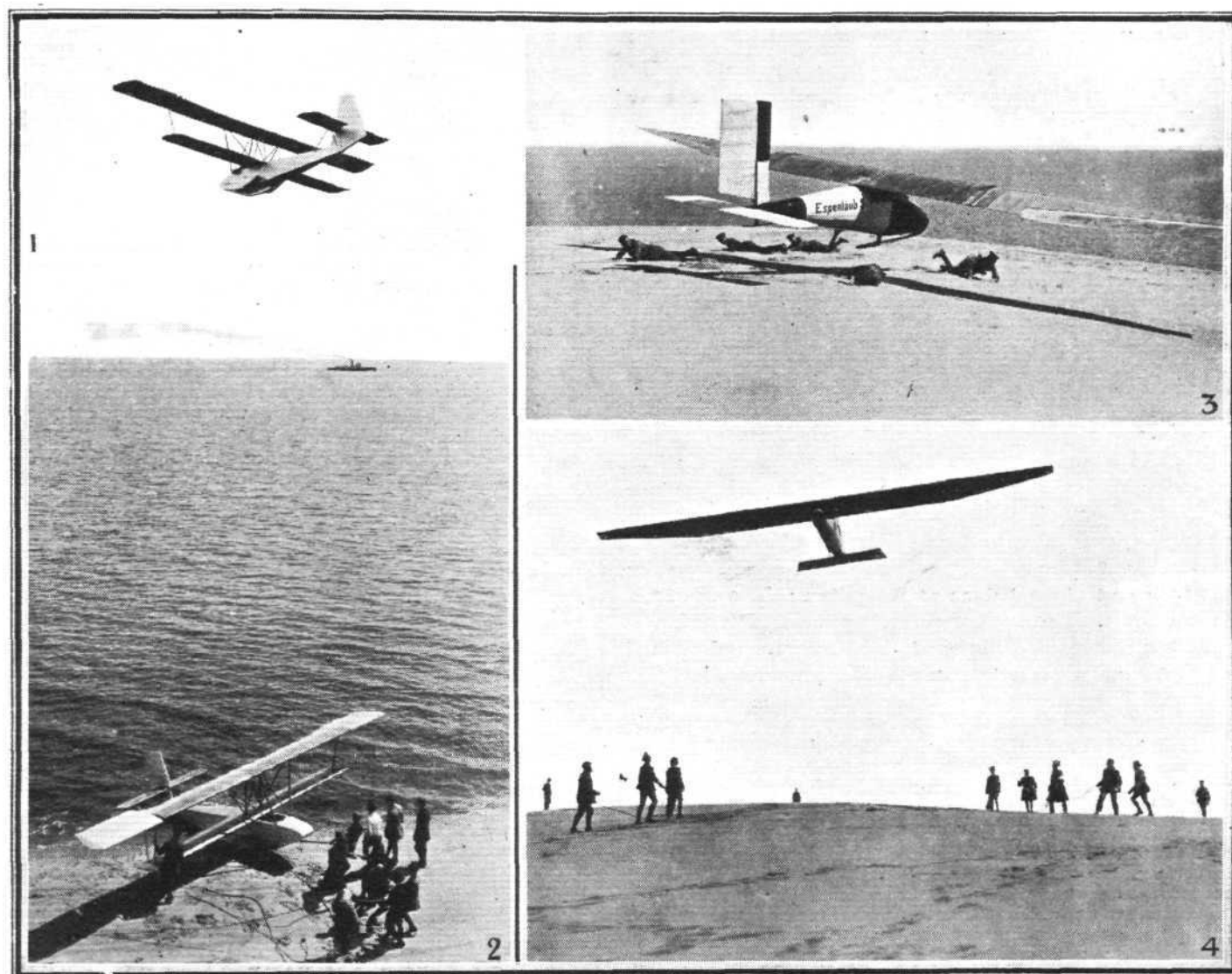
Fokker F.VII Flies High

THE Fokker F.VII (Napier "Lion"), which recently gave a demonstration at Croydon, put up a fine altitude flight on April 30. Piloted by Engineer Grasé and carrying a useful load of 2,200 lbs., an altitude of over 20,000 ft. was attained, which, after correction to standard F.A.1 atmosphere, was reduced to 19,000 ft. The world's record for this load is 18,900 ft., so that, although the Fokker F.VII exceeded this height, it has not officially beaten the record, as a record now can only be homologated when the existing altitude is exceeded by at least 330 ft.

LIGHT 'PLANE AND GLIDER NOTES

THE announcement, published in last week's *FLIGHT*, that an air race meeting is to be held at Lympne on August 1, 2 and 3, will be welcomed by all interested in the light 'plane movement, since the meeting is to be largely one for light 'planes. Personally, we are not certain that from some points of view Lympne is the best possible place for such a meeting, being rather out of the way, and from the point of view of propaganda one of the London aerodromes would probably have been preferable. It seems likely, however, that there were certain difficulties in arranging the meeting in London, and from the technical or flying standpoint, Lympne is, of course, excellent, what with a fine course, having plenty of

only "unlimited" race being the International Handicap, in which there is to be no restriction on engine power. The course will be the same as last year's light 'plane course, so that the machines are, in clear weather, in sight practically the whole time. The short triangular course is of advantage, from the spectators' point of view, in that where a considerable number of laps have to be covered the machines pass time after time, and one is able to see how the race is progressing, which machines are gaining and which losing. The small angle of the homeward and outward legs at Lympne also necessitates some very steep banks, if competitors are to avoid losing too much on the turn, and thus calls



The German "Küstenflug, 1925": This year's competition over the sand dunes surrounding the Kurisches-Haff, in the Baltic, has attracted a fairly large number of gliders and at least one light 'plane. Our photographs show: 1, The "Delphin" of the East Prussian Aviation Society in flight. This machine is built as a miniature flying boat so as to be able to alight on the water. In 2 the machine is shown on the beach. Note the unusual lateral control. 3 shows an exciting take-off by the "Esenlaub 5," in which the starting crew had to fall flat to avoid the machine. In 4 the "Esenlaub 5" is seen in flight. Note the high aspect ratio.

fields, suitable for forced landings, good shed accommodation and workshops at hand if necessary. Another rather unfortunate feature of the August meeting is that it clashes with the Vauville meeting, which is to be held near Cherbourg, from July 26 to August 10. The French meeting is to be international, and several Dutch and Belgian machines have already been entered, and it might have been possible to enter some of the British light 'planes. The Lympne August meeting definitely makes this impossible, and will moreover be likely to prevent many who had intended to visit Vauville during the holidays from doing so. We do not say that all this could have been avoided, but it is somewhat unfortunate nevertheless.

As to the Lympne meeting itself, a perusal of the preliminary programme shows that the majority of events will be for light 'planes, or, at any rate, for "lightish" planes," the

for some fine piloting, which will doubtless be greatly appreciated.

THE Grosvenor Challenge Cup Handicap will not, presumably, be a purely light 'plane event, since an engine weight of 275 lb. is permitted. This would seem to let in machines fitted with engines up to the size and weight of the Aircraft Disposal Company's "Cirrus" engine, for instance, but will preclude the Bristol "Lucifer." Unless new machines are rushed through, it would seem that the highest-powered machines in this event will be the de Havilland "Moths," of which, by August, there should be a goodly number in existence. As the race is to be a handicap, all last year's two-seater light 'planes and the 1923 single-seater light 'planes will be admitted, and may be expected to take part in not inconsiderable numbers. This event is, of course, for British machines only.



Glider and Light 'Plane at Rossitten : The upper monoplane is the "Dessauer," piloted by Fuchs, during a duration flight of eight hours. Below it is seen the Espenlaub light monoplane.

THE Light Aeroplane Holiday Handicap, which is open to both single-seaters and two-seaters, provided the engine weight does not exceed 170 lb., is to be an international affair, but as such Dutch and Belgian machines as exist have probably by now been entered for Vauville, it seems rather doubtful whether we shall have the pleasure of seeing any foreign competitors in this event. There is, we believe, a possibility that one of the Pander monoplanes may take part, as its Anzani engine comes within the weight limit stipulated. We are sure all would welcome the participation of at least one of these machines, which, selling at a price of £450, and having an excellent performance, are a most attractive proposition. Apart from the Pander, however, we are not very optimistic as regards seeing foreign machines taking part, and as the engine weight will preclude the "Moths," this competition will probably be in the main for last year's two-seaters, with possibly one or two of the 1923 single-seater light 'planes.

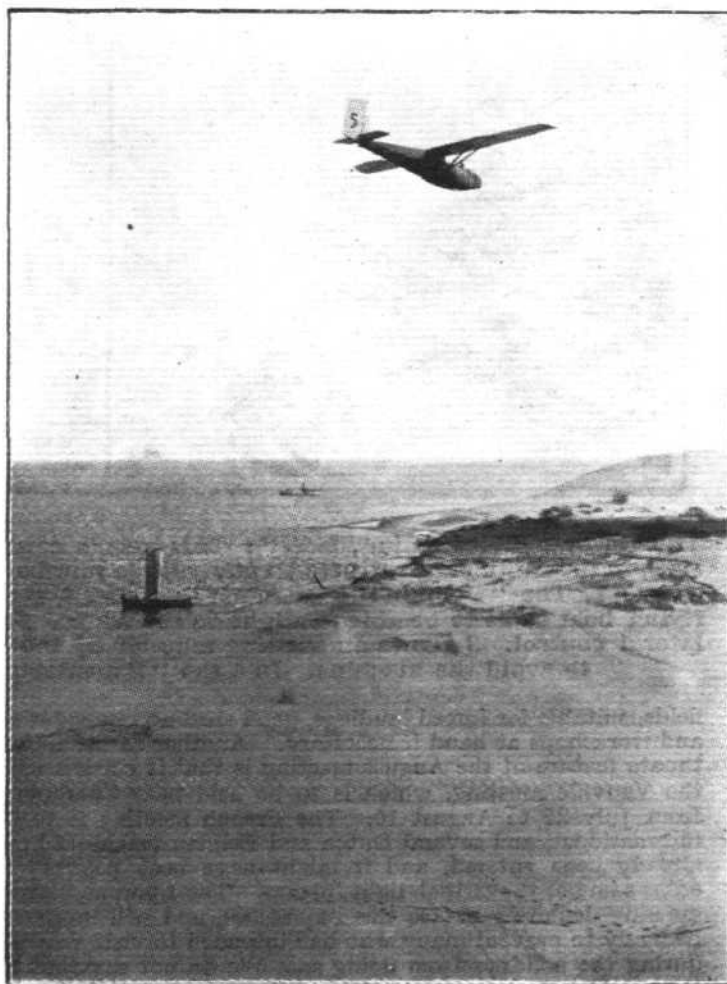
So far reference has been made to handicap races only. Three scratch speed races, at least, will be flown, two of which will be international, while the third will be an inter-club race for de Havilland "Moths" owned by the various light 'plane clubs. In the single-seater light 'plane scratch speed race the engine weight will be limited to 120 lb., while in the two-seater race the engine may weigh up to 170 lb. We are not quite certain what is the weight of the "Y"-type Anzani fitted on the Pander light monoplane, but it seems probable that it is within the limits fixed, in which case the Pander might be seen competing with Parnall "Pixies," de Havilland 53's, ANEC I's, etc. The race being a scratch one, is, of course, for speed only, and perhaps the R.A.E. Aero Club's "Hurricane," which Bulman handled so masterly last year in the Grosvenor Cup Race, might also be counted upon to take part.

In the similar event for two-seaters, the "Moth" will be ruled out on account of engine weight, but the two-seaters of last year should be represented in force, the "Pixie" as

a monoplane being quite fast, as also the Beardmore "Wee Bee," the Sopwith-Hawker "Cygnets" the "ANEC II" and the Westland "Wood Pigeon." It is also to be hoped that some of the machines which did not get a chance of doing much at Lympne last year will be present, if not in the speed races, at any rate, in the handicaps. Cases in point are the Blackburn "Bluebird," the Short "Satellite," the Avro "Avis," and the supermarine "Sparrow." All of these machines should be capable of giving quite a good account of themselves, and would be very well worth entering. The prizes offered are not, of course, on the same scale as last year's Air Ministry Competitions, but, on the other hand, these machines are already in existence, and it would cost but very little to get them into trim for racing.

THE inter-club race for de Havilland "Moths" should mark the beginning of a new kind of air racing, a sort of one-design class racing in which victory or defeat will depend upon the amount of power that can be coaxed out of the engine and the manner in which the pilot takes his corners. This type of racing deserves to become very popular and should do much to stimulate interest in the light 'plane clubs, each club being naturally frightfully keen on winning. We trust that in years to come inter-club racing will become a regular feature of our season's flying programme.

At the moment it is not quite clear whether the certified performances competition planned may be flown in connection with the other races as regards greatest speed over 3 kms. and over 50 kms., but in any case this could only apply to the speed performances, and separate events would have to be arranged for greatest height in 30 minutes and greatest altitude reached. In these performance tests, incidentally, the engine weight is limited to the new figure of 170 lbs., which has been decided upon for the 1926 Air Ministry competitions. No distinction is made between single-seaters and two-seaters, the same engine weight being permitted for the two types.



A two-seater glider at Rossitten : The Academic Flying Group, Darmstadt's "Margarete," in flight over the Kurischen-Haff. Note the kind of country over which the machines fly.



At Rossitten : A fine start by the "Donnerstag Klub" of the Grünau Gliding School.

so that presumably it is open to anyone to fit a larger engine into the single-seater, and so obtain a better performance certificate than the two-seater with the same size engine.

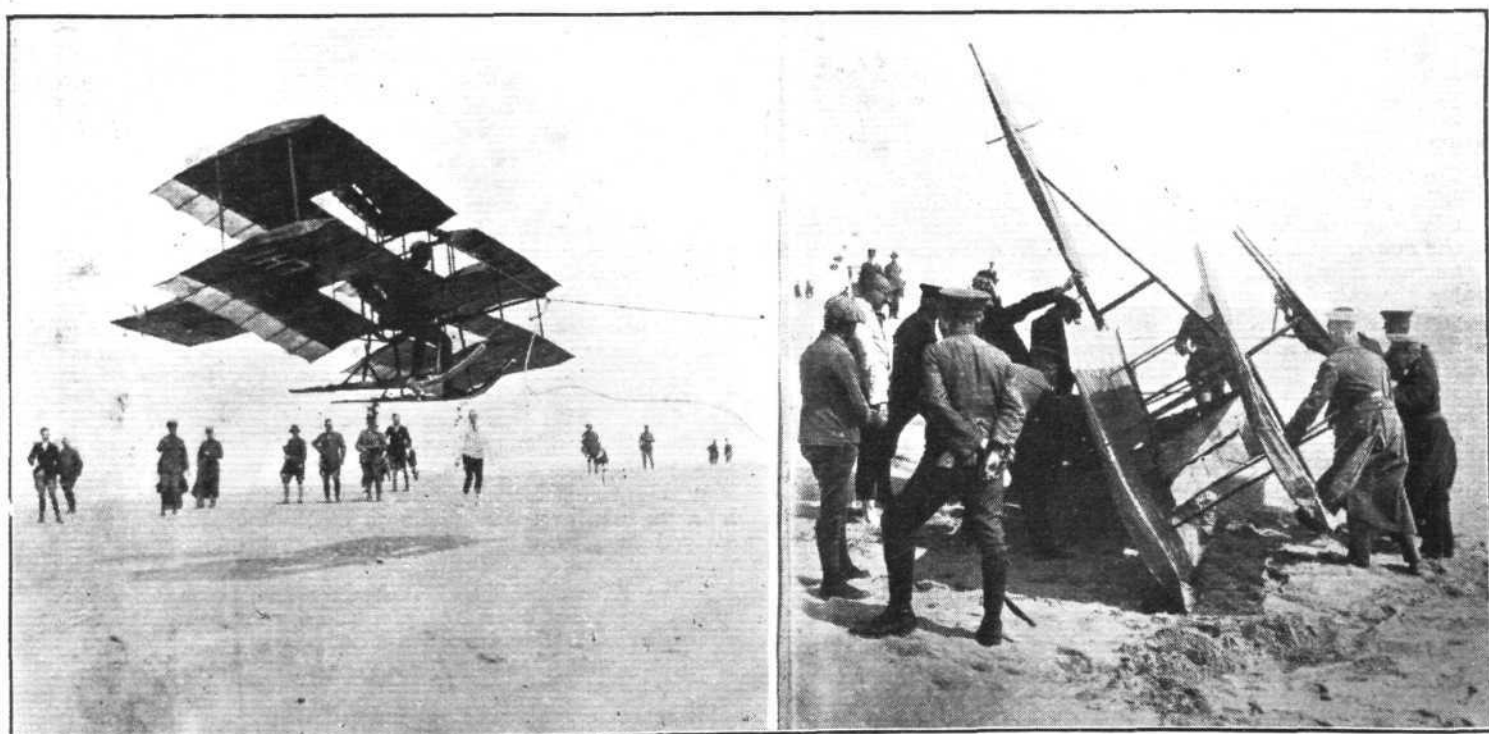
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THAT was a very fine flight of Cobham's and General Brancker's in the de Havilland "Moth" the other day, and showed how the low-power aeroplane can be used as a cheap touring machine. Leaving London at noon, the "Moth" arrived at Cardington half-an-hour later, where a stop was made for lunch and to give Sir Sefton an opportunity of inspecting airship progress. Leaving Cardington at 3 p.m., Leicester was reached at 3.30. After lecturing before the Leicester Chamber of Commerce, the air travellers left the next day for London, reaching Stag Lane without incident. Sufficient luggage was carried for personal needs, and the journey was carried out entirely without outside assistance. Not bad for an "unblessed" machine.

WE would call attention to the notes from the Lancashire Aero Club, published on the next page. It is evident that this club is going ahead, and the generosity of Mr. George Parnall, Col. Darby, and A. V. Roe and Co must mean a very great deal to the club. Let us hope others will follow these excellent examples, and assist in some such practical form other clubs which are now struggling along and trying to make a serious start.

* * *

A GLIDER meeting is being held at present near Rossitten, on the Kurische Haff, on the coast of the Baltic, some pictures of which appear in these notes. So far the most outstanding performance has been a glide of 8 hours' duration, made by Fuchs in the old "Dessauer" in an attempt to beat the world's record. Towards evening, however, the wind dropped, and Fuchs dropped with it.



A wing-flapping machine at Rossitten : On the left the start of a flight, and on the right its termination. This machine, it will be seen, has small flapping wings mounted in the middle of the usual planes. Owing to the soft nature of the sand neither pilot nor machine were damaged to any great extent.



For the German "Rundflug": The light monoplane of the Flugtechnischer Verein, Spandau. The engine is a 30 h.p. two-cylinder Haacke, air-cooled.

An interesting machine is the biplane built as a flying boat so as to enable it to alight safely on the sea if necessary. This machine is shown in two views, and the unusual lateral control should be noted. The wing tips are pivoted, and operated by the inter-plane struts in such a manner that the tip of the dropping wing remains in the neutral position while the tip of the rising wing is given a negative angle of incidence.

AMONG the machines tried at Rossitten is a biplane with flapping winglets accommodated in cut-out portions in the

main wings. We do not know whether any long flights have been made yet, but two of our photographs show the machine starting off and "landing." It is not quite clear whether the crash was due to the pilot of the machine or to faulty starting. The fact that one of the starting ropes is slack while the other is still taut rather indicates that the starting crew may have been to blame. On the other hand, the small size of the flapping wings does not give hope of any great effect, while the cut-out must entirely ruin the performance of the main wings.

LIGHT 'PLANE

WE shall be pleased to have reports regularly from Club Secretaries, or those directly connected with new Light 'Plane Clubs, so that by keeping our readers informed on this matter the whole movement may be helped forward to the benefit of the clubs and the popularising of "that Air feeling."

Light 'Plane Clubs are being, or have been, formed at:—

London.—Lieut.-Com. H. E. Perrin, Secretary, Royal Aero Club, 3, Clifford Street, W.1.

Birmingham.—Major Gilbert Dennison, Hon. Secretary, Midland Aero Club, Handsworth, Birmingham.

Glasgow.—J. Allison, Esq., Jnr., 219, St. Vincent Street.

Lancashire.—C. J. Wood, Esq., Secretary, Lancashire Aero Club, c/o A. V. Roe and Co., Newton Heath, Manchester.

Newcastle-on-Tyne.—Alex. H. Bell, Esq., Hon. Sec., Newcastle-on-Tyne Light 'Plane Club, County Hotel.

Yorkshire.—Prof. G. Brodetsky, Yorkshire Aeroplane Club, Leeds University.

We have received the following report on the progress being made:—

The Lancashire Aero Club, Manchester.—A most successful evening was held by the club on Tuesday, May 5, at the Manchester, Ltd., Café. A formal meeting was first held, at which it was agreed without dissent to convert the Lancashire Aero Club into a limited company. Mr. Goodfellow, of Messrs. Goulty and Goodfellow, the club's legal advisers, was instructed to proceed with the formation of the company. The Chairman made several announcements: he mentioned that the club was now officially "approved" by the Air Ministry, and that the two D.H.60 machines were expected in June; that the L-P-W glider was being fitted with a 746 c.c. Douglas engine, and would be ready

CLUB DOINGS

for instruction early in June. This machine was being entirely re-conditioned. Mr. George Parnall, of Messrs. Geo. Parnall and Co., Ltd., has made a most generous present of a Douglas engine complete with countershaft, mounting, propeller, etc., to the club. Anxious to obtain a propeller suitable for the engine to be fitted in the L-P-W, Messrs. Parnall were asked if they had any second-hand propellers they would sell to the club. Mr. Parnall became interested in the work which has been done, and offered the club his Douglas engine which was used in the "Pixi" and won the speed prize at Lympne in 1923. As the club will now have two engines, it is intended to commence the building of a light single-seater machine. Mr. Leeming also announced that a shed, and the use of the aerodrome at Woodford, Cheshire, had been offered to the club free of all charge by Messrs. A. V. Roe and Co., Ltd. The shed is a full-sized hangar, and Messrs. Roe expect to hand this over to the club in June. At the suggestion of Sir William Letts it is hoped to obtain a good club-house at the aerodrome by renting a part of the old farm. Sir William Letts has assured the club of his interest and willingness to do anything he can to assist. The 504K Avro training machine presented to the club by Col. Darby, of the Aircraft Disposals Co., Ltd., is to be re-conditioned, and it is hoped will be flying shortly.

Following these announcements two short lectures were given by the club's instructors on "Training," and after an interval for refreshments a few amusing "turns" were enjoyed. These were provided by Mrs. Grant and Mr. Rutherford, who kindly gave their services without cost. The Lancashire Aero Club Band then took over, and the rest of the evening was devoted to dancing.

Carnegie Medal Award

THE Carnegie Medal and 10,000 fr. were awarded on May 5 to M. Richard, the French mechanic who, on September 29 last, climbed out on to the wing of a Goliath, when flying over Tunbridge Wells en route from Croydon to Paris, in order to execute repairs to one of the engines, thus enabling the machine to reach Lympne in safety.

Aircraft-Carrier's Return

H.M.S. "HERMES," Captain the Hon. Arthur Stopford, C.M.G., which was due to complete a refit at Malta Dockyard on May 12, is returning home at once, and will be recommissioned on June 3 for further service in the Mediterranean.

Cobham's London-Berlin-London Flight

IN connection with bringing home for certain London newspapers photographs of the ceremony in the German Reichstag when General von Hindenburg took the oath as

Germany's President, Mr. Cobham made another fine flight this week. Leaving Stag Lane after lunch on Monday, May 11, in his D.H.50 with Siddeley "Puma," the same machine used on the flight to India and back, Cobham arrived in Berlin in time for dinner, having covered the flight without a landing in six hours. The next day he left Berlin with a *Daily Mail* staff photographer on board at 1 p.m., and arrived in London in 6½ hours' flying, having again made the journey without landing. A strong head wind was encountered on the homeward trip, which accounted for the longer time taken.

It is significant that Cobham had been away from London only some 32 hours, and had in that time flown about 1,200 miles, while still spending a good many hours in Berlin, sufficient for the transaction of a considerable amount of business. A similar trip by boat and train would take 24 hours each way, plus the time spent in Berlin.



SIR SAMUEL HOARE ON HIS IRAQ TOUR

"An Ordinary Trip in Usual Safety One Would Expect From British Machines."

ON Friday of last week, the Secretary of State for Air gave an interview to representatives of the press, in which he gave some of his impressions of the tour recently completed by himself and Mr. Amery to Egypt, Transjordan and Iraq. The party, it will be remembered, travelled by train and boat to Egypt, but all their journeys in the East were made by aeroplane. The Air Minister insisted upon the fact that the trip was *not* a sensational one, and he described it as "an ordinary trip in the usual safety one would expect from British aeroplanes." He did, however, emphasise the fact that this was the first occasion on which two British Ministers had inspected such a large area by aeroplane, and spoke in the very highest terms of the great advantage he had derived from a personal inspection of the districts visited, the tour having been made possible solely by using aircraft. As a result of the tour, although he had not yet reported to the Cabinet, he saw possibilities for considerably reducing the expenditure on the Middle East vote. The policy of "Control without Occupation" had been a very real success.

The actual air journey began on March 25, when the party flew from Egypt to Aman. The Air Minister had formed the opinion that Transjordan was a good deal more settled than it was two years ago, and he considered it a country of great possibilities if settled conditions could be established and maintained, and people be induced to settle there, as doubtless they would do as conditions became better. On March 26, the journey was continued to Baghdad (using Vickers' Vernons), a distance of 530 miles, and the Air Minister pleaded guilty to being rather bored on the flight, the outlook not being very interesting. At Baghdad a number of important conferences were attended and reports received, and on March 31 the party flew up to Mosul, passing over several interesting ancient ruins. At Mosul, he found two battalions formed by the descendants of the Assyrians, who were doing admirable gendarmerie work under British officers. During the War, these descendants of the Assyrians had suffered greatly, and only about 20,000 all told were left.

The Air Minister also gave some of his impressions of a journey in D.H.9A's to Kirkuk and to the pass leading into

Persia. Sulimaneh, a Kurdish town, was also visited, and the party experienced one of the local dust storms, which, Sir Samuel Hoare said, had to be seen to be realised. The dust was very fine, and appeared to be formed from the mud of the great rivers. During the visit to the north, the weather had been extremely cold, and as the amount of personal luggage that could be carried was not large, it was difficult to arrange for a suitable wardrobe. On returning to Baghdad, it was very hot, as also at Busra, the next port of call. Here the R.A.F. were doing a great deal of photographic survey work, which was found extremely useful, and it had been discovered that some of the old maps were as much as 50 or even 100 miles "out." Visits were also paid to the Anglo-Persian oil fields, and the Air Minister was astonished at the magnitude of the undertaking. At the end of the pipe line one came to Darquain, where it was interesting to see the port filled with oil tankers.

On the return journey across the desert, a head wind was encountered, and the machines had to refuel on the way. Sir Samuel stated that replenishment of the tanks (buried in the ground) was carried out partly by road transport and partly by air, some of the larger types of aeroplanes being used as tankers.

Asked as to the possibilities not only of airship services, but also of aeroplane services, Sir Samuel said he was very keen to get a section of the route going, and that at present operated across the desert as far as Baghdad or Busra should present no technical difficulty.

The Air Minister also referred to the projected flights from Egypt to South Africa and Nigeria, and expressed the opinion that such flights, which would be undertaken as soon as conditions were suitable over the whole route, would be of more use to the British Empire than fresh attempts to circle the globe.

His flying tour in the East had covered something like 3,500 miles, and occupied no more than 50 flying-hours, and the whole tour went off without a hitch, thanks to the excellence of the British machines and engines and to the excellent organisation of the R.A.F.

AIR MAILS

THE Postmaster-General announces that letters may now be posted for transmission by new air mails to Switzerland (serving also Italy) and to the western parts of the United States, and by certain additional or resumed air mails to France, Germany and Denmark (serving also Norway and Sweden). Particulars of these mails are given below. Letters intended for transmission by air mail may be registered, but not insured, and may be posted in any of the ordinary ways of posting. Each letter should bear in the top left-hand corner of the cover a blue official "Air Mail" label (obtainable free at any head or branch office), or be very plainly marked "By Air Mail"; and it must be prepaid with a special fee in addition to the appropriate ordinary postage.

Air Mails to the Continent: The latest times of posting for the respective mails at the General Post Office, London—in the public letter box each week-day, unless otherwise stated—the chief countries served, and advantages offered, are:

A.—At 6.15 a.m. to France, Switzerland and beyond: offering delivery in Paris the same afternoon, at Bâle and Zurich the same evening (if an express fee is prepaid), and in most of Switzerland by first post next morning. By connecting at Bâle with the night mail train thence to Italy, this air mail also offers earlier delivery of letters throughout Italy, e.g., at Milan by first post on the morning after departure from London. Night mail postings from the Provinces and late night postings from London should benefit by this air mail.

B.—(1) At 6.15 a.m. to Germany (Hamburg and district): offering delivery at Hamburg the same evening (if an express fee is prepaid) or by first post next morning. (2) At 6.0 p.m. (except on Saturday) for onward transmission by air from Rotterdam next morning to Germany (Hamburg and district), Denmark, Norway (east) and Sweden: offering delivery at Hamburg next afternoon, in Copenhagen next evening, in Stockholm and in Oslo during the forenoon and the afternoon of the second day after posting. Letters to Hamburg and district posted in all parts throughout the 24 hours should benefit from the use of these air mails. The evening mail offers advantage for letters to the three Scandinavian countries posted in time for the night mail in London or in the morning in the nearer Provincial towns.

C.—At 6.15 a.m. to Morocco and Western Algeria (additional to the existing 6.0 p.m. despatch), offering delivery at Tangier, Casablanca and Oran on the morning of the second day after posting.

The special fee payable (in addition to ordinary postage) is as follows:—On letters to France, 2d. per oz.; to Germany (unoccupied), Switzerland and Italy, 3d. per oz.; to Denmark, Norway and Sweden, 4d. per oz.; to Morocco and Western Algeria, 3d. up to $\frac{1}{2}$ oz., 6d. up to $3\frac{1}{2}$ oz., 3d. additional for each additional $\frac{1}{2}$ oz.

Air Mail to the Western United States: Beginning on May 9 last, a new air mail will be closed at the General Post Office, London, simultaneously with each ordinary mail to New York, usually at 2.0 a.m. each Saturday and Wednesday, for onward transmission from New York by the New York-San Francisco Air Mail Service, the present timing of which is understood to be as follows:—Depart New York 9.30 a.m. daily; arrive Chicago, 5.40 p.m.; Omaha, 11.0 p.m.; Cheyenne, 4.15 a.m.; Salt Lake City, 10.05 a.m.; San Francisco, 5.0 p.m. (31 $\frac{1}{2}$ hours from New York). A direct air mail will similarly be made up at Southampton, and at Liverpool when there is a direct ordinary mail thence to New York. There will be no late fee posting of air mail letters for the United States by boat train at Waterloo or Euston Station in London.

The air mail route from New York to San Francisco is divided into three zones terminating at Chicago, Cheyenne and San Francisco respectively. The amount of the special fee payable, and the minimum transit time from London to the places in question, assuming conveyance to New York by fast steamer and regular flight afterwards, are as follows:—First zone (New York-Chicago): Special fee 6d. per oz. Minimum transit time London-Chicago about 8 days. Second zone (beyond Chicago to Cheyenne): Special fee 11d. per oz. Minimum transit time London-Cheyenne about 9 days. Third zone (beyond Cheyenne to San Francisco): Special fee, 1s. 3d. per oz. Minimum transit time London-San Francisco about 9 days. Letters not prepaid in British postage stamps with the correct amount of fee (in addition to ordinary postage) will not be included in the air mail.

TRANS-OCEANIC AIRWAYS

Ambitious Heavier-than-Air Scheme.

It has come to be accepted almost without question that for long-distance routes, at any rate over the sea, the only practicable type of aircraft is the airship, and it may almost be said that in modern times when one speaks of airships, one invariably means the rigid type of airship. Now, there is an old saying to the effect that anything which has been said three times comes to be accepted as a truth. Something of the sort may possibly be happening in the matter of airships in general, and also on the question rigid or non-rigid. There are still those who believe that for a start, at any rate, the non-rigid or semi-rigid has by no means reached the limits of its development, and that, before jumping into five-million cubic-foot sizes of rigids, the possibilities of the smaller type might with advantage be explored. That there are even those who are not altogether convinced that the airship of any type is necessarily the only solution to long-distance routes was brought to our notice recently when a scheme was placed before us which does not propose to use airships at all, even for trans-oceanic air routes. The scheme is, frankly, an ambitious one, and we personally are not pre-

As the basis of the whole scheme is the use of station ships, a few notes dealing with these may be of interest. Mr. Gaynor has had the idea of station supply ships in mind for many years, and, in fact, during the War, when there was difficulty in transporting the aeroplanes built by the United States across to the fighting front, he suggested the use of such ships. At that time the scheme was probably premature, at any rate, it was not taken up, and Mr. Gaynor now considers that sufficient progress has been made with the development of aircraft and aero engines to make the technical side of the problem capable of solution.

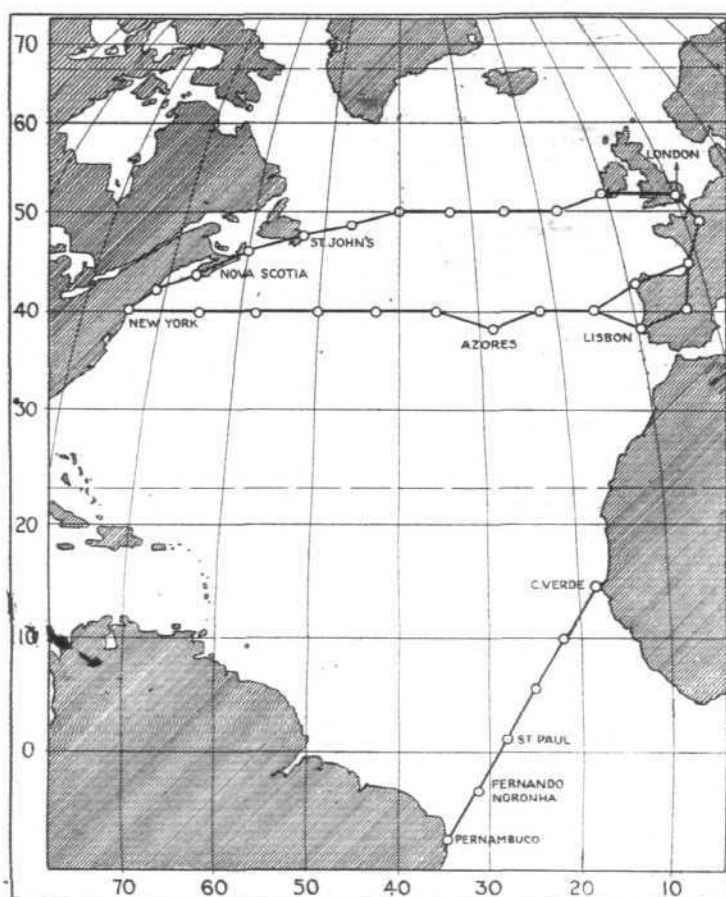
The special supply ships, designs for which have been patented by Mr. Gaynor, provide for a long flat deck or platform, unobstructed for a sufficient distance to allow, if necessary, a machine to take off, and having derricks or cranes for hoisting machines out of the sea or dropping them on to the sea. Below the flying-off deck accommodation is provided for the storing of several machines, for workshops capable of undertaking repairs and overhauls, for accommodation for crews and passengers, and with complete wireless installation, searchlights, etc. It is not intended that machines should always necessarily take off from the decks of these ships, as it is intended that machines of the seaplane or flying-boat type should be used, which in normal weather should be able to take off from the sea, and the hoisting on board of a machine should be the exception rather than the rule. At the same time, the inventions of Mr. Gaynor provide for letting seaplanes take off from the deck, which is in the form of a series of rollers running transversely across the ship, and it is thought that twin-float seaplanes at any rate should be able to take off in this fashion. In the case of flying-boats it might be rather more difficult to arrange, but it would seem that some form of detachable undercarriages, serving to steady the machine during its run, could be designed.

If found necessary, Mr. Gaynor considers it possible to anchor these ships, but he believes that a better plan would be to let them cruise around slowly, not only because they would ride easier in a seaway, but they would also then be able to steam to the aid of any machine that might be in difficulties between two ships. Normally, as we have said, it is not suggested that it should be necessary to take the machines on board. They would alight as close as possible to the supply ship, and petrol would be transferred by means of flexible piping or hose.

In the accompanying sketch-map is indicated how it is suggested the station ships should be located for a trans-Atlantic route, and both a northern and a southern route is shown, as well as one connecting the west coast of Africa with South America.

The placing of the station ships would naturally be dependent upon the climatic conditions and the fuel capacity of the aircraft employed, it being desired on the one hand to keep the number of station ships down to a minimum, and, on the other, to make the stages short enough to give the aircraft a sufficiently large carrying capacity, apart from fuel, to enable them to earn the largest possible revenue. As shown on the map, the station ships are placed roughly 340-400 miles apart, and it is considered that this distance would form a good compromise, especially as it is desired that, should weather reports from one ship be unfavourable, a machine could fly around that locality and proceed to the next ship. Mr. Gaynor states that storms in the Atlantic rarely cover an area of more than 700 to 1,000 miles across, so that by making use of the weather reports sent out by wireless from the station ships machines would, he considers, be able to avoid really bad weather.

The scheme would, in Mr. Gaynor's opinion, be primarily one to be undertaken by the shipping industry of the nations who interested themselves in the undertaking, and the aircraft industry would, although benefiting in the matter of orders and experience, occupy a position equivalent to the shipbuilder rather than the shipowner. Mr. Gaynor points out that at the present time there is a *bagatelle* of four million tons of shipping lying idle in the United States, and something like 500,000 tons in Great Britain, with possibly six million tons idle in the world. He believes that anything likely to give shipping a new lease of life would be welcomed by shipping interests, and suggests that from the various nations which might be expected to benefit from the speeding-up which such a route would bring about there would be no difficulty in obtaining at very low prices ships which could be converted for use as station ships, while the scheme was



Sketch-map showing the suggested ship stations for proposed seaplane routes across the Atlantic.

pared to express a definite opinion as to its feasibility. It is, however, always refreshing to study an old subject from a new angle, and it is for this reason, among others, that we have thought a few notes dealing briefly with the new scheme of sufficient interest. Many difficulties still remain to be overcome, quite apart from the magnitude of the undertaking from a financial point of view, but these are not, or at least do not appear to be, insuperable provided the necessary capital is available to carry out the development work.

Put very briefly, the scheme consists in the suggested operation of trans-oceanic air services with seaplane or flying boats, using specially-designed station ships placed at suitable intervals as refuelling and repair bases. For the purpose of initiating the movement, a syndicate is, we understand, about to be formed, to be known as the Oceanic Airways Company (Development and Equipment), with offices at 17, Green Street, Leicester Square, London, W.C.2. Interested in the scheme are Mr. T. F. Gaynor, who has designed the special station ships, and Mr. J. G. Navarro, who will be remembered as a designer and constructor of aircraft during the War.

in its earlier stages, although specially-designed ships would doubtless be preferable afterwards.

As to the question of flying equipment, we understand that Mr. Navarro has designed a machine of somewhat unorthodox lines, which will have a carrying capacity of approximately one ton useful load, while still carrying enough fuel to enable it to miss one supply ship at the spacing indicated, and to reach the next, should weather conditions make this necessary or desirable. The type is a flying-boat, but the design is such that it would, perhaps, be more accurate to describe it as a single-float seaplane in which the fuselage and single-central float are streamlined together. Although not very much like it, perhaps an idea of the lines of the machine may be formed if we say that the machine is somewhat of the same arrangement as the Loening amphibian recently illustrated in *FLIGHT*. By a peculiar arrangement of struts and side floats, the machine can be produced, with small modification, as a single-engined tractor, a twin-engined biplane, or a three-engined tractor, with one engine in the nose of the fuselage and two on the wings. Up to the present, we have only been shown a rough general arrangement sketch, so cannot express an opinion on the design other than that the machine is somewhat unusual in its lines. The particular advantage of the design claimed by Mr. Navarro is, we understand, low structure weight.

As regards the financial side of such a project it will be readily understood that this is one of such magnitude, as well as being essentially international in character (since many countries in Europe, Canada, and North and South America would be directly interested), that it could only be undertaken by several nations, or at any rate companies of several nations, and the suggestion is, we understand, that shipping interests of several countries should get together in order to look into the subject. It is estimated that (basing the estimate on a fairly small type of machine, with a paying load of half a ton), the revenue from first-class mails at the rate of 6d. per letter (with an average weight of $\frac{1}{10}$ th oz.) would be about £1,100 per trip, while the running expenses are estimated at £257 per machine per trip. This figure does not, however, include the cost of the supply ships, which would, of course, depend mainly upon the number of flights made per year, but an estimate has been prepared which looks very attractive, on paper at any rate. To estimate at all accurately must of necessity be well-nigh impossible, as one has no data to go upon, but it does not appear improbable that if the technical difficulties can be overcome, the financial side would in time, when public confidence had been established, be capable of being put on a satisfactory footing. The saving in time would be so great between London and New York, for instance, that if the reliability could be maintained there should be sufficient load for a large number of machines on such a route.

It is not, of course, difficult to discover obstacles in such a scheme, apart altogether from its magnitude. For instance, there is the question of weather conditions. Normally, there is no reason to doubt that with modern engines, and possibly using a type of machine in which three engines were used, any two of which were capable of flying the machine with full load, there should be little chance of a forced landing between station ships, and the stages contemplated are not so long as to present, as far as one can foresee, any particular difficulty. Even if it is granted, however, that the machines would not be forced to land between station ships, there is still the danger of fogs, which might render the approach of the seaplane to the ship a difficult task, even granting the use of direction-finding wireless and all modern navigation equipment. Flying at night would be another difficulty, although it seems quite probable that this would be, if anything, easier over the sea than over land. Certainly one would be able to set one's altimeter to sea-level zero with no hills to worry about; but on a foggy or rainy night it might be difficult to pick up the ships' searchlights. Then there is the question of very rough seas, when a machine could not safely alight, or even if it did manage to do so, it might be quite impossible to take it in tow or bring it on board the ship. Concerning the station ships themselves, and the problem of keeping them reasonably accurately in place during all sorts of weather, we do not feel qualified to speak, but from the flying point of view there are many difficulties other than those to which we have referred.

The whole scheme appears to us rather too ambitious, at any rate to be launched into straight away. We should personally prefer to see experiments carried out over the North Sea, for instance, with perhaps two station ships suitably placed. The North Sea provides quite a variety of weather and seas, fogs and gales, and we think a great deal could be learned from such an experimental service first. One would then be in a much better position to judge of the feasibility or otherwise of the more extensive route. The idea of bringing London within about 48 hours of New York is certainly attractive, and there can, we think, be little doubt that, once its reliability was established, such a service would be well supported, not to mention the extensions which one might probably count upon, such as the joining up by branch routes of Paris, Madrid, Lisbon, Rome, etc., but we do think that the scheme should be tried out on a smaller scale first. An experimental service between England and North Germany and Scandinavia should provide extremely useful data, and the cost would not, of course, be anything like as great as that of the transatlantic scheme.

Those interested and wishing for further particulars should write to Mr. Navarro at the address given above, who will be pleased to go into the subject with *bona fide* inquirers.

Independent Force (R.A.F.) Re-union Dinner

THE seventh annual re-union dinner of the Independent Force (R.A.F.), including all officers of Army troops and other attached units, will be held at the Royal Air Force Club, 128, Piccadilly, London, W. 1, on Tuesday, June 23, next, at 7.45 p.m. for 8 p.m. Air Chief Marshal Sir H. M. Trenchard, Bart., G.C.B., D.S.O., will take the chair, and the orchestra from the R.A.F. Central Band will be in attendance. Evening dress, with miniatures. Tickets, price 10s. (excluding wines), may be obtained from the Hon. Secretary, I.F. (R.A.F.) Dinner Club, Room 546, Adastral House, Kingsway, W.C. 2, and it is requested that applications for tickets be submitted as early as possible. The Committee of the R.A.F. Club have kindly consented to making honorary members for the occasion of those who do not belong to the R.A.F. Club. Anyone applying for a ticket who afterwards finds himself unable to attend the dinner will have his money refunded.

Big German-International Air Combine

ACCORDING to the *Times* correspondent, negotiations for an international combine of air traffic companies have been brought to a conclusion, and that a share company entitled the "Europa Union" has been formed under the management of the Junkers Air Traffic Company. The preliminary capital is stated to be 50,000 marks (£2,500), to be increased next week to 10,000,000 marks (£500,000).

The following firms are to be in the combine: Ad Astra Aero, Zurich; Aero O.Y., Helsingfors; Esthonian Air Traffic Co., Aeronaut, Reval; Aero Transport Co., Stockholm; Bavarian Aero-Lloyd, Munich; Danish Air Transport Co., Copenhagen; Danzig Air Post Co., Danzig; Lettland Air Traffic Co., Riga; Austrian Air Traffic, Vienna; Junkers Aeroplane Works, Dessau; Junkers Air Traffic Co., Berlin;

Rumpler Air Traffic Co., Munich; Silesian Air Traffic Co., Breslau; Ruhr Air Traffic Co., Essen; Saxon Air Traffic Co., Dresden; and S.W. German Air Traffic Co., Frankfurt.

Institution of Aeronautical Engineers Proceedings

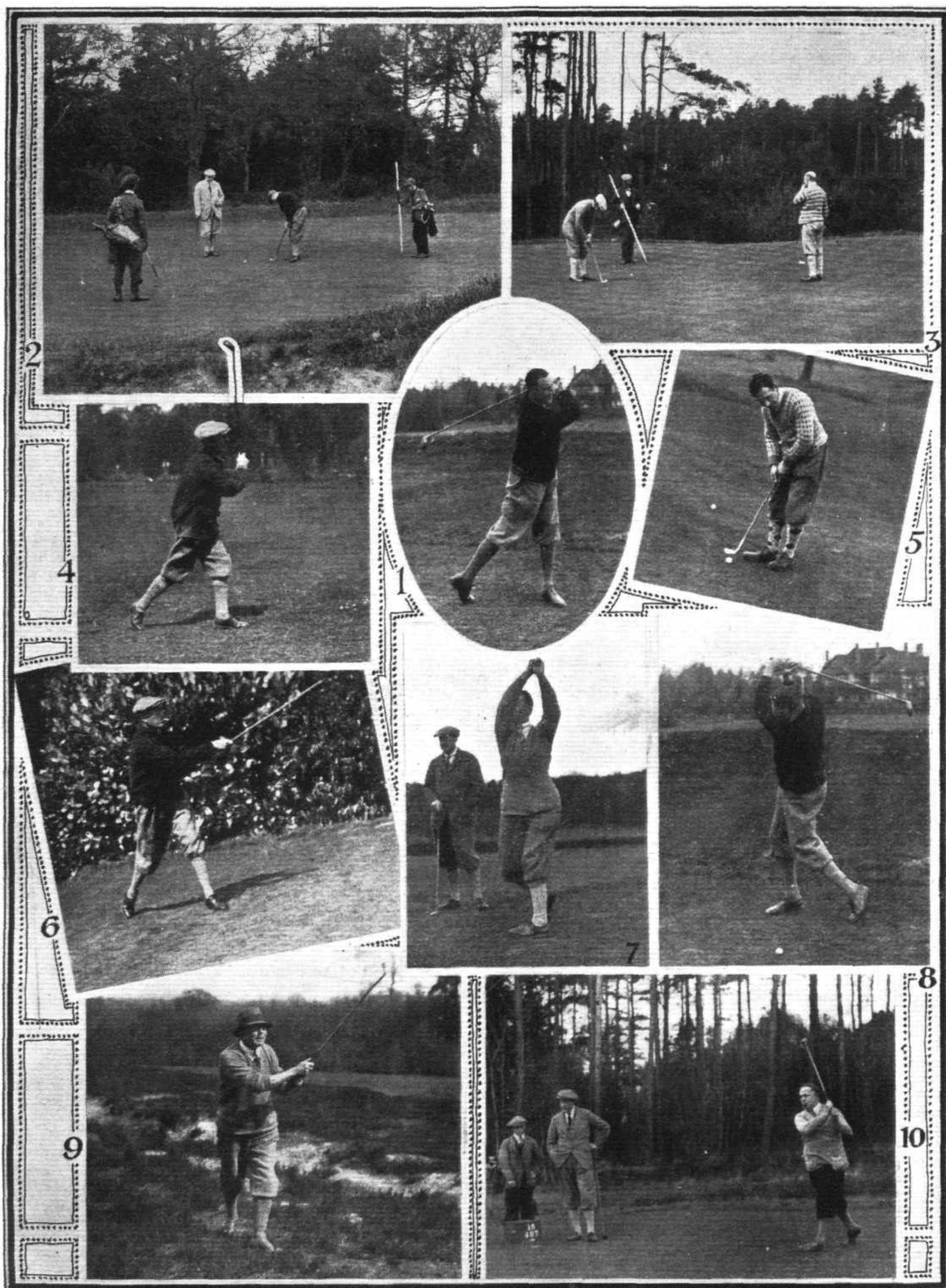
THE Minutes of Proceedings, No. 14, of the Institution of Aeronautical Engineers, just published, contains a full report of the paper on "The History and Evolution of the Avro Training Machine," read before the institution by Mr. R. J. Parrott, A.C.G.I., on January 9 last. This report, being fully illustrated and including the discussion which followed the lecture, forms a most interesting and valuable publication, not only from the technical point of view, but as an historical record. Minutes of Proceedings may be obtained from the offices of the Institution, 60, Chancery Lane, W.C. 2, price 1s. 6d.

Air War in Morocco

ACCORDING to the *Daily Mail* correspondent there is now being concentrated in Morocco, in connection with the French campaign against the invading Riffs of Abdelkrim, the greatest striking Air Force in the history of Colonial warfare. The air squadron at Tunis has received orders to fly at once to the Riff front, while another air squadron is on its way to Morocco from Metz, and other squadrons are being drawn from nearly all other bases in France.

"The Gloster"

AN excellent production, full of good items, is our verdict in regard to No. 1 of *The Gloster*, the house journal of the Gloucestershire Aircraft Co., Ltd., of Cheltenham. If future issues can maintain the same standard as that obtaining in No. 1, *The Gloster* will be a pleasure to which we shall look forward each month.



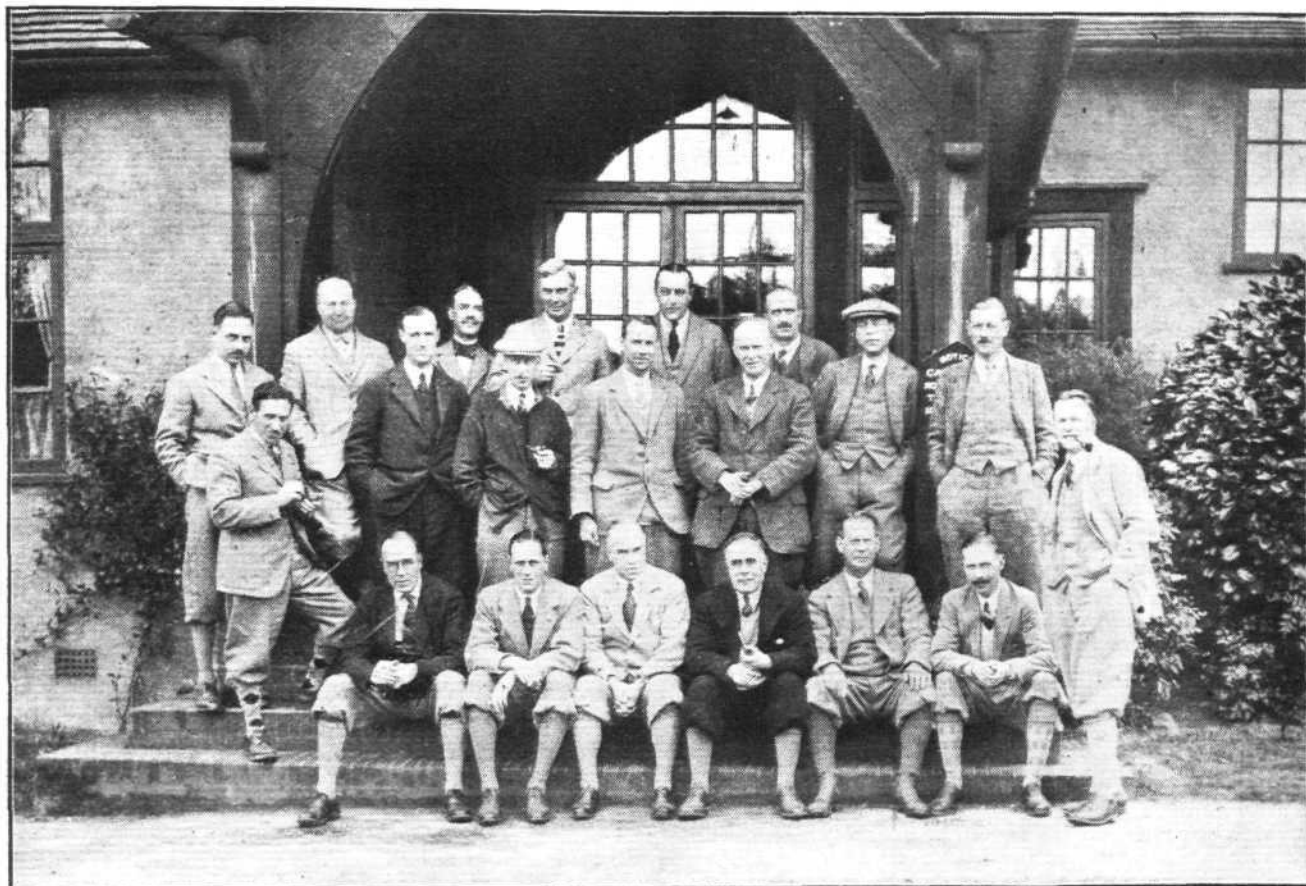
AERO GOLFING SOCIETY'S SPRING MEETING AT WORPLESDON: Playing for the "FLIGHT" Challenge Cup: 1, A. J. A. Wallace Barr (winner) driving from the sixth tee. 2, Sir Henry White Smith and Commander Briggs at the fourteenth hole, Commander Briggs putting. 3, F. Cumbers and Col. Bristow at the fifth hole, Cumbers putting. 4, F. Mead, approach shot first hole. 5, A. Newman putting on third green. 6, P. Barry driving from first tee. 7, Maj. Mayo driving from second tee. 8, E. N. Clifton driving from sixth tee. 9, Capt. Lenn in the rough. 10, E. J. B. How and H. E. Perrin at the fifteenth tee, Perrin driving.

THE AERO GOLFING SOCIETY'S SPRING MEETING

THE Spring Meeting of the Aero Golfing Society was held on Thursday last, May 7, at Worplesdon Golf Course, when the principal event, the "Flight" Challenge Cup, provided some good play. Weather conditions were variable, but not unpleasant, and a strong wind added somewhat to the excitement of the match. The results of the Medal Round for the "Flight" Challenge Cup, were as follows:—

The other event of the day's proceedings, which followed, was the Four Ball Foursomes Bogey. This produced five couples in play with the following results:—

E. J. B. How and Lieut.-Com. H. E. Perrin	7 up
Sir Henry White Smith and Commander W. Briggs	4 up



THE AERO GOLFING SOCIETY: This group, taken outside the Club House at the Worplesdon Golf Club last week, when the "FLIGHT" Cup was played for and won by Mr. Wallace Barr, shows: Front row (seated), from left to right, P. Barry, A. J. A. Wallace Barr, Sir Henry White Smith (Captain), Lieut.-Col. H. E. Perrin (Hon. Secretary), Paymaster-Capt. F. Lenn, R.N., and F. O. R. F. Casey. Standing, left to right, E. N. Clifton, Capt. A. Newman, Lieut.-Col. A. Bristow, H. Burroughes, F. Cumbers, F. Mead, Capt. W. G. Aston, Maj. Mayo, F. J. B. How, Capt. J. Robinson, Capt. T. P. Mills, Commander W. Briggs, Squadron-Leader A. C. Winter, and P. Garton.

A. J. A. W. Barr	81 less 4 = 77
Lieut.-Com. H. E. Perrin	92 " 13 = 79
E. N. Clifton	84 " 4 = 80
Sir Henry White Smith, C.B.E. ..	95 " 14 = 81
F. Mead	scratch 82
T. P. Mills	87 less 5 = 82
P. Garton	99 " 15 = 84
Flying-Officer R. F. Casey ..	106 " 18 = 88
Paymaster-Capt. F. Lenn, R.N. ..	106 " 18 = 88

P. Barry and F. Mead	3 up
A. J. A. W. Barr and E. N. Clifton ..	All square
Capt. W. Aston and Squad.-Leader A. C. Winter	All square

Additional prizes were presented for both events by Mr. F. Cumbers, of British Celanese, Ltd., viz.:—Medal round, first nine holes and second nine holes; Bogey, first nine holes and second nine holes.

France and Czechoslovakia

It is reported that an agreement, in connection with aeronautical matters, has been drawn up between France and Czechoslovakia.

Meteorological Reports Issued by Wireless Telegraphy

A THIRD edition of the handbook entitled "Particulars of Meteorological Reports issued by Wireless Telegraphy in Great Britain and the Countries of Europe and North Africa" (M.O. 252) has now been issued by the Meteorological Office, Air Ministry, and can be purchased for the sum of 3s. 6d. from H.M. Stationery Office. It contains full particulars of the meteorological bulletins issued by the various countries. These bulletins are normally issued at least three times a day, and include ordinary ground observations of weather, wind, temperature, humidity, and height of the barometer

for a number of places. They also include information about conditions in the upper air, reports from ships at sea, weather forecasts, etc. Full particulars are given of the various codes in use for summarising all this information. The area dealt with now extends westwards to America, eastwards to Siberia, northwards to Spitsbergen, and southwards to Northern Africa. Between the appearance of the second and third editions of the handbook there have been many changes in both British and foreign reports; in some cases the time or manner of issue has altered, and in others the information given is different. These changes have been published in a series of 15 supplements to the second edition, the subject-matter of which is included in the present edition, which is up to date according to the information available on February 14, 1925. It will be subject to amending notices from time to time, as in the case of the earlier editions.

LESSONS OF 1924

THE final meeting of the Institution of Aeronautical Engineers was held on Friday, May 8, when Capt. W. H. Sayers read a paper entitled "Lessons of 1924." Capt. Sayers characterised the year 1924 as "one of steady, if perhaps relatively uneventful, progress in the development of aviation." The year had, however, been marked by a number of notable performances, among which he referred to the first flight around the world by the Douglas cruisers, the gallant but unsuccessful attempt by McLaren, the round-Australia flight by Goble, the circuit of Australia by Col. Brinsmead, the Amsterdam-Batavia flight, and, finally, the flight to India and back by Cobham and Sir Sefton Brancker. These flights had, the lecturer said, served to illustrate the great improvement in the reliability of the aeroplane as a means of transport.

On the subject of safety of air travel, Capt. Sayers pointed out that the cross-Channel service was unfavourably placed because conditions were by no means good for flying, and comparison was always made with highly developed British rail and steamer services of excellent quality. If instead of a route such as the London-Paris one, a journey covering a route of considerably greater distance and devoid of such highly developed surface transport was considered, air transport assumed a relatively much higher degree of safety and reliability. "If," the lecturer said, "the alternative to a few hours in an aeroplane is a week's foot-slogging through uninhabited bush or desert, a degree of safety quite insufficient for the London-Paris service will be a great advance on that of the alternative." There were certain dangers in flying, and it could not reasonably be expected that flying should become as safe in the absolute sense as a well-run railway of today for some considerable period. "But," the lecturer continued, "it is essential for man to travel over routes which cannot possibly for many years to come be served by such railway services. If the aeroplane can give on such routes a quicker, cheaper, safer and more reliable service than is otherwise possible, the fact that it is not as safe or as cheap as a railway somewhere else has no valid significance."

After referring to some of the speed races held during 1924, Capt. Sayers said that in some quarters there was a tendency to regard air racing as an unnecessary waste of money and risk of life. With that view he did not agree. Although a racing machine was of no direct use for anything except racing, there were indirect results which might be of the

greatest value. He was fairly convinced that all sporting competitions should be governed by rules which encouraged "freak" designs, because when one was designing for useful service one was forced to compromise between incompatible qualities. As long as one never did anything but compromise one could not be sure how much the compromise really cost, and it was therefore good occasionally to throw compromise overboard and go all out for one particular quality. He thought it unfortunate, however, that speed racing was the only form of competitive flying in which an exaggeration of one specific quality was encouraged. The Lympne light plane trials of 1923 encouraged freak economy, and the success of that meeting was, he thought, an indication of the wisdom of contests for freaks. The 1924 Lympne competition was far from being a complete failure, but it did in fact fail to produce the machine suitable for training purposes which was the ostensible object of the competition. It could be said generally that competitions under complicated rules, designed to produce machines for specific useful purposes, would fail of the desired effect for the very good reason that designers worked to defeat the rules and not to produce what the rule-makers wanted.

In conclusion Capt. Sayers referred to the flight from Germany to America of the Z.R.III, and said that, although there was no doubt as to the ultimate future of airships, we still had to acquire a very much larger experience of both the building and the operating of airships before the would-be traveller to America embarked on an airship for that journey as readily as he now embarked on a liner.

The Chairman, Mr. S. T. G. Andrews, thought it a pity that the route for the Aerial Derby was changed and taken away from the centre of population. As regards air racing, Mr. Andrews pointed out that motor-cars had been vastly improved as a result of motor racing, and he thought the same would apply to aircraft.

Mr. L. Howard Flanders suggested that in connection with air races a certain minimum speed should be demanded in order to qualify in the eliminating trials, thus bringing the high-speed machine down to something really useful.

Lieut. Olechnovitch was sorry that the lecturer had not touched on the question of training, and wanted to know if the methods of choosing pilots and of training them when selected had changed since the War.

A Westland Limousine in Canada: But for the Westland Limousine (Napier "Lion") shown above, the mining village of Rouyn in Canada would be isolated from civilisation during the winter months, for snow and ice renders the roads useless. Westland Limousines, however, maintain a daily in-and-out service between Rouyn and Larder Lake a distance of about 100 miles—and thus provide the inhabitants with fresh supplies from the "Larder." The machines are fitted with skids in place of wheels, enabling them to function on the ice and snow.



THE ROYAL AIR FORCE

London Gazette, May 5, 1925

General Duties Branch

The following Pilot Officers are promoted to rank of Flying Officer:—P. G. Chichester; Feb. 14. J. W. Colquhoun; Feb. 14. E. V. H. Jarvis; March 9 (since transferred to Reserve). E. C. A. Wing; March 14. H. D. Mitchelmore; March 18. W. F. Langdon; March 23. Flying Officer R. F. Carter (Lieut., R.N., retd.) is granted the honorary rank of Flight-Lieut.; April 15. Pilot Officer on probation P. E. Nicholl is confirmed in rank; April 24. Wing-Commander P. K. Wise, C.M.G., D.S.O., is placed on retired list; April 17.

The following relinquish their temporary commissions on return to Army duty:—Flight-Lieut. J. S. Windsor, M.C. (Lieut., S. Wales Borderers); April 21. Flying Officer F. St. D. B. Lejeune (Lieut., R.A.); April 26.

Medical Branch

Flight-Lieut. J. K. R. Landells, M.B., is granted a permanent commn.;

April 29. Flying Officer J. B. Gregor is promoted to rank of Flight-Lieut.; April 30. Sqdn.-Ldr. J. H. Wood, M.C., M.B., D.P.H., relinquishes his temp. commn. on ceasing to be employed; May 1.

Reserve of Air Force Officers.

The following are confirmed in rank:—Flying Officers.—G. L. Shephard; April 21. R. M. Stirling, A.F.C.; May 4. Pilot Officer.—P. H. Davies; May 4. Flying Officer C. E. F. Searle resigns his commn.; March 21.

Princess Mary's Royal Air Force Nursing Service.

Miss E. S. Browbank resigns her appointment as Staff Nurse, acting Sister March 29.

Memoranda.

The permission granted to Lieut. W. E. Macpherson, D.F.C., to retain rank is withdrawn on his enlistment in the Army; March 21.

ROYAL AIR FORCE INTELLIGENCE

Appointments.—The following appointments in the Royal Air Force are notified:—

General Duties Branch

Squadron Leader R. M. Drummond, D.S.O., O.B.E., M.C., to H.Q. Coastal Area, instead of to R.A.F. Depot, as previously notified; 1.5.25.

Flight Lieutenants: E. F. Turner, A.F.C., to H.Q. Coastal Area; 1.5.25. E. R. B. Playford, to R.A.F. Depot, on transfer to Home Estab.; 2.4.25. B. D. S. Tuke, to R.A.F. Depot; 15.4.25. L. J. Riordan, A.F.C., to No. 99 Sqdn., Bircham Newton; 28.4.25.

Flying Officers: H. G. P. Ovenden, to R.A.F. Base, Malta; 30.4.25. F. H. Bedford, M.C., M.M., to R.A.F. Depot, on transfer to Home Estab.; 16.4.25. T. Fetherstonhaugh, to No. 28 Sqdn., India; 1.5.25. D. H. Macdonald-Lawson, to R.A.F. Depot (Non-effective Pool), on transfer to Home Estab.; 12.4.25. J. P. Hinks, to No. 3 Stores Depot, Milton; 4.5.25. P. J. Bett, to No. 2 Flying Training Sch., Digby; 5.5.25. A. H. D. Livock, to No. 20 Sqdn., India; 1.5.25. H. A. J. de S. Barrow, to No. 16 Sqdn., Old Sarum; 18.5.25.

Pilot Officers: G. D. Gibson, to R.A.F. Depot; 5.5.25. B. B. Dowling, to R.A.F. Depot, on transfer to Home Estab.; 12.4.25. M. E. de L. Hayes, to No. 2 Sqdn., Manston; 18.5.25.

Stores Branch

Flight Lieutenant W. A. Glasper, to R.A.F. Depot on transfer to Home Estab.; 2.4.25.

Flying Officer J. E. Truss, M.C., to C. and M. Party, Isle of Grain; 6.4.25.

Accountant Branch

Flight Lieutenants: H. G. Bushell, to remain at Coastal Area H.Q., instead of to R.A.F. Base, Leuchars, as previously notified. K. R. Money, O.B.E., to R.A.F. Base, Leuchars; 11.5.25. W. Rollinson, to No. 100 Sqdn., Spittlegate, instead of to Coastal Area H.Q., as previously notified; 28.4.25.

Flying Officer G. W. Lynn, to No. 1 Sch. of Tech. Training (Boys), Halton, instead of to No. 41 Sqdn., as previously notified; 5.5.25.

Medical Branch

Flying Officers: H. W. D. Mackenzie, M.B., to R.A.F. Depot; 4.5.25. G. J. Griffiths, to No. 1 Sch. of Tech. Training (Boys), Halton; 16.5.25. L. C. Palmer-Jones, M.B., to Inland Area Aircraft Depot, Henlow; 14.5.25.

IN PARLIAMENT

Air Service Over German Territory

Capt. W. BENN on May 7 asked the Secretary of State for Air whether any agreement has been come to with the German Government as to the passage of British aircraft over German territory; and, if so, whether any modification is to be made in Part XI and Article 202 of the Treaty of Versailles?

Sir S. Hoare: As regards the first part of the question, the German authorities have agreed to an arrangement which will place the regular air services on the lines London-Amsterdam-Berlin and London-Brussels-Cologne on a more permanent footing than hitherto, but it has not been found possible to reach agreement in regard to other services across German territory. Arrangements have also been made to simplify the procedure for obtaining permission for individual flights to and across Germany not undertaken as part of a regular air service. As regards the second part of the question, the answer is in the negative.

Minister's Tour in Middle East

Sir H. BRITTAIN asked the Secretary of State for Air whether he can give the House the mileage travelled by air and the approximate amount of time saved by this means of transport in the recent visit of inspection carried out by himself and the Secretary of State for the Colonies?

Sir S. Hoare: The total distance travelled by air by my right hon. friend the Secretary of State for the Colonies and myself in the course of our recent

tour of inspection in the Middle East was approximately 3,500 miles. I am unable to give any figure for the amount of time saved, but our itinerary included localities almost inaccessible to all but the most primitive forms of ground transport, and to have visited these localities by any other means than the air would have entailed an absence from England of months, not weeks.

Royal Air Force (Sick Leave and Pay)

Sir G. STRICKLAND asked the Secretary of State for Air whether he is aware that officers of the Royal Air Force have resumed duty after forced landings that broke two or four limbs; and whether, in view of this example, he will consider the advisability of granting additional emoluments, in the shape of pay or pensions, to Air Force officers that have received serious injuries on duty?

Sir S. Hoare: An officer who sustains injuries of the nature referred to in the question does not resume duty in the Royal Air Force unless and until he is reported fit for service by a board of medical officers. When the injury is caused by flying duty the normal period of sick leave on full pay is 12 months, which may be extended up to a further period of six months. The suggestion contained in my hon. friend's question is, in effect, one for the reintroduction of a system which was very fully considered and rejected in 1921, and I do not see any good reason for a reconsideration of that decision.

R.A.F. Flying Accidents

THE Air Ministry regrets to announce the following flying accidents:—As a result of an accident at Brough, at 3.00 p.m., on May 5, to a Blackburn Kangaroo machine, Flying Officer Hugh Crichton McDonald, Reserve of Air Force Officers, the pilot of the aircraft, was killed. As a result of an accident at Khaniutman, Iraq, to a Bristol Fighter of No. 6 Squadron, Mosul, on May 4, Lieutenant John Ellerthorp Griffith, Iraq Levies, was killed, Flight Lieutenant Walter Archer Bouchier Savile, R.A.F., the pilot of the aircraft, being slightly injured. As a result of an accident at Ambala, India, to a Bristol Fighter, of No. 31 Squadron, Ambala, on May 9, Flying Officer Robert Richard Studdert Waller, the pilot of the aircraft, was severely injured and died of injuries on May 10.

"Air Posts of the World"

AIR-POST collecting started but a very few years ago as an unimportant side-line of that "Tree of Knowledge" Postage-Stamp Collecting. It could hardly be called a branch of that tree—merely a cutting. This cutting, however, "took" well, and, side by side with the remarkably rapid progress of aviation, has now grown into a healthy and independent young tree. For, as Mr. Alan Turton points out in his excellent book "The Air Posts of the World," the cult

of collecting air-post material has, since the War, become phenomenal, and its adherents are numbered in thousands. The latter are not confined to postage-stamp collectors only, for many who have never been greatly interested in this hobby have taken up air-post collecting.

That air-post collecting forms a subject quite distinct from—though closely related to—ordinary stamp collecting is apparent when one looks through Mr. Turton's book, for we find there particulars not only of air-post stamps issued for use in connection with air mails, but of those many other items that come within the scope of this subject, viz., semi-official, unofficial, and commemorative stamps or "labels"; cachets, postmarks, and flown covers—ordinary and special flights such as the transatlantic flights, etc. Of all these numerous varieties, as far as we can see none have escaped Mr. Turton, and details, if not illustrations, of these are to be found in "Air Posts of the World." There are, in fact, over 400 illustrations in this book, including photo-reproductions of the various stamps, covers, etc., and facsimile reproductions of postmarks and other postal markings.

Even if you are not a collector of air posts yourself, this book is really extraordinarily interesting, for it also forms an historic record of the progress of the aerial transport of mails, from the early French balloon and pigeon posts of 1870 to the Zeppelin Z.R.3 transatlantic flight of last year.

In conclusion, "Air Posts of the World" is undoubtedly the most complete work on this subject that has so far been produced.

* "Air Posts of the World." By Alan Turton, 59, Bishopsgate, London, E.C. 2. Price 7s. 6d. nett.

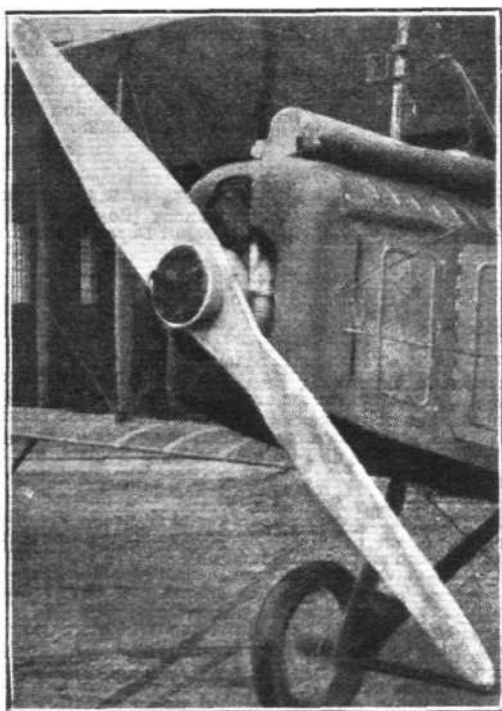
METAL AIRSCREW PROGRESS

WE have, from time to time, published reports on the development of the all-metal airscrew, both in this and other countries, for the importance of this subject undoubtedly calls for more than passing consideration. In America, as no doubt most of our readers are aware, no small amount of success has been achieved with the Curtiss-Reed all-metal airscrew manufactured by the Curtiss Aeroplane and Motor Co., of Garden City, N.Y.—and which is manufactured in this country by the Fairey Aviation Co., of Hayes, Middlesex.

This week we are able to report another advance in metal airscrew development, viz., the first tests in actual flight with a single-piece magnesium airscrew. These tests were carried out (on February 6 last), at Curtiss Field, Garden City, on a J1 Standard equipped with a Curtiss C.6 engine and piloted by M. M. Merrill, one of the Curtiss pilots.

Previous to these tests, the propeller was given a ten-hour whirling test with 100 per cent. overload (300 h.p.), under direction of the Army Engineers at McCook Field, Dayton, and passed all requirements. These tests prove that magnesium alloy has the physical qualities necessary for propeller construction.

The significant feature of this alloy is its weight—25 per cent. lighter than duralumin. A magnesium propeller can



THE CURTISS-REED ALL-METAL AIRSCREW : The latest development of the all-metal airscrew, made from a single piece of magnesium, which comes out lighter than an airscrew made of duralumin.

utilise all the qualities which make metal propellers superior to wood, and, in addition, will weigh no more, and in many cases less, than a wooden propeller designed for the same type of machine.

This propeller was made from a rolled plate of magnesium alloy containing 96 per cent. magnesium and 4 per cent. aluminium, supplied by the American Magnesium Co. of Niagara Falls, which Company deserves credit as it was only after research and experiment that it was able to produce a plate of sufficient size—the largest ever made. In fact, this development is a notable feat of metallurgy. Now that it is accomplished, the American Magnesium Co. advises that it will be possible to build plates large enough for any standard type of propeller. The finishing and twisting was done by the Curtiss Aeroplane and Motor Co., Inc., under the direction of S. A. Reed, inventor of the famous Curtiss-Reed Duralumin Propeller. The work was carried out under the Curtiss-Reed patents along lines substantially the same as those employed in the manufacture of the duralumin propellers.

The Curtiss Company and Mr. Reed are planning to continue the tests and experiments along constructive lines with the idea of eventual production. Naturally, this development depends to a large extent on the price of magnesium, and while it is too early yet to determine this, the officials of the American Magnesium Co. believe that the price may compare favourably with that of duralumin.

PUBLICATIONS RECEIVED

Aeronautical Research Committee, Reports and Memoranda :
No. 934 (Ae. 155).—Wind Channel Tests on Radiators. By R. G. Harris and W. K. Alford. August, 1922. Price 1s. net.
No. 942 (Ae. 162).—The Royal Aircraft Establishment Control Movement Recorder, Mark III. By D. A. Jones and H. L. Stevens. October, 1924. Price 6d. net.
No. 943 (Ae. 163).—Test of Three Aerofoils Suitable for High Speed, A.D.1, Sloane, and R.A.F. 26. By F. B. Bradfield and A. S. Hartshorn. October, 1924. Price 6d. net.
No. 944 (Ae. 164).—Measurement of Pitching Moments due to Roll on Wings of Avro 504K. By F. B. Bradfield. November, 1924. Price 4d. net.
No. 945 (Ae. 165).—Lift and Drag of Junker Monoplane, Comparison of Model with Full Scale Results. By B. D. Clark and others. November, 1924. Price 9d. net.
No. 946 (Ae. 166).—Theory of the Design of Aerofoils, with an Analysis of the Experimental Results for the Aerofoils R.A.F. 25, 26, 30 to 33. By H. Glauert. November, 1924. Price 6d. net.
No. 948 (Ae. 168).—An Experimental Investigation into the Properties of Certain Framed Structures having Redundant Bracing Members. By Prof. A. J. Sutton Pippard and J. F. Baker. December, 1924. Price 1s. 3d. net. H.M. Stationery Office, Kingsway, London, W.C.2.

Pictorial Calendar, May, 1925, to April, 1926. William Beardmore and Co., Ltd., Glasgow.

The Royal Air Force Memorial Fund. Fifth Report. Jan.-Dec., 1924.—The Royal Air Force Memorial Fund, 7, Iddesleigh House, Caxton Street, Westminster, S.W.1.

Taschenbuch der Luftflotten IV 1924-25. Compiled by Dr.-Ing. Werner von Langsdorff. J. F. Lehmanns, Munich, Germany.

The Rigid Airship : A Treatise on the Design and Performance. By E. H. Lewitt. Sir Isaac Pitman and Sons, Ltd., Parker Street, Kingsway, London, W.C. Price 30s. net.

Rendiconti Tecnici, March 15, 1925.—Direzione Superiore del Genio e delle Costruzioni Aeronautiche, Viale Giulio Cesare, Rome. Price L.40.

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NEW COMPANIES REGISTERED

FAIREY AVIATION CO., LTD.; Registered Office, Cranford Lane, Hayes, Middlesex.—Nominal capital £10,100, in £1 shares (10,000 preference and 100 ordinary). The objects are:—To adopt an agreement with the Fairey Aviation Co., Ltd. (incorporated in 1921), and its liquidator; to manufacture and deal in aerial conveyances and aircraft of all kinds, and the component parts thereof, including engines and all kinds of machinery, and apparatus for use in connection therewith, etc. First directors: C. R. Fairey, F. G. T. Dawson; C. O. Crisp, Lieut.-Col. V. Nichol, D.S.O., D.S.C. C. R. Fairey, F. G. T. Dawson and C. O. Crisp are permanent.

NORTH-EAST COAST AUTOMOBILE AND AVIATION COMPANY, LTD., E "A" Floor, Milburn House, Dene Street, Newcastle upon Tyne.—Capital £100, in £1 shares. Manufacturers of and dealers in automobiles, aeroplanes, etc. First Directors, P. L. Hunting and G. L. Hunting.

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AERONAUTICAL PATENT SPECIFICATIONS

Abbreviations : Cyl. = cylinder; i.c. = internal combustion; m. = motor. The numbers in brackets are those under which the Specifications will be printed and abridged, etc.

APPLIED FOR IN 1924

Published May 14, 1925

6,247. FAIREY AVIATION CO., LTD., and C. R. FAIREY. Spars for aircraft. (232,387.)

8,109. LORD INVERNAIRN (W. BEARDMORE) and A. E. L. CHORLTON. Valve gear for multi-cyl. i.c. engines. (232,399.)

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